

IN THE CLAIMS:

Please amend the claims as follows:

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5. (Amended) An apparatus for use in carrying out a binding assay, comprising:

- (a) a cell;
- (b) a sonication device, structurally coupled to said cell, for sonicating contents of said cell; and
- (c) one or more solid phase supports, said supports having one or more binding domains formed thereon.

6. (Amended) An apparatus as recited in claim 5, wherein said sonication device is capable of providing sonication energy at from 0.1 to 10,000 kHz.

7. (Amended) An apparatus as recited in claim 5, wherein said sonication device has a power of from 0.001 to 10 watts.

8. (Twice Amended) An apparatus as recited in claim 5, wherein said one or more solid phase supports comprise one or more working electrodes and said cell further comprises one or more counter electrodes, and said one or more working electrodes and said one or more counter electrodes are adapted for conducting an electrochemiluminescence assay.

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9. (Twice Amended) An apparatus for use in conducting a binding assay, comprising:

- (a) a cell adapted for conducting assays which involve binding reagents; and

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46. (Amended) ~~An apparatus as recited in claim 5, wherein said one or~~
~~more solid phase supports comprise binding reagents immobilized thereon.~~

47. (Amended) ~~An apparatus as recited in claim 5, wherein said cell further comprises one or more electrodes having binding reagents immobilized thereon.~~

48. (Amended) An apparatus as recited in claim 46, wherein said binding reagents are patterned on said one or more solid phase supports into a plurality of distinct

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binding domains and at least one of said binding domains comprises binding reagents differing in specificity from at least one other binding domain.

49. (Amended) An apparatus as recited in claim 47, wherein said binding reagents are patterned on said one or more electrodes into a plurality of distinct binding domains and at least one of said binding domains comprises binding reagents differing in specificity from at least one other binding domain.

50. (Amended) An apparatus as recited in claim 46, wherein said one or more solid phase supports is structurally coupled, through a surface of said cell, to said sonication device for sonicating the contents of said cell.

3 51. (Amended) An apparatus as recited in claim 47, wherein said one or more electrodes is structurally coupled, through a surface of said cell, to said sonication device for sonicating the contents of said cell.

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52. (Amended) An apparatus as recited in claim 5, wherein said sonication device is a piezoelectric device.

53. (Amended) An apparatus as recited in claim 5, wherein said sonication device is an electromagnetic actuator.

55. (Amended) An apparatus as recited in claim 9, wherein said cell further comprises a solid phase support having said binding reagents immobilized thereon.

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56. (Amended) An apparatus as recited in claim 9, wherein said cell further comprises an electrode having binding reagents immobilized thereon.

57. (Amended) An apparatus as recited in claim 55, wherein said binding reagents are patterned on said solid phase support into a plurality of distinct binding domains and

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at least one of said binding domains comprises binding reagents differing in specificity from at least one other binding domain.

59. (Amended) An apparatus as recited in claim 55, wherein said solid phase is in solid contact, through a surface of said cell, to said sonication device for sonicating the contents of said cell.

60. (Amended) An apparatus as recited in claim 56, wherein said electrode is structurally coupled, through a surface of said cell, to said sonication device for sonicating the contents of said cell.

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61. (Amended) An apparatus as recited in claim 9, wherein said sonication device is a piezoelectric device.

62. (Amended) An apparatus as recited in claim 9, wherein said sonication device is an electromagnetic actuator.

63. (Amended) An apparatus as recited in claim 33, wherein said sonication device is an electromagnetic actuator.

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65. (Amended) An apparatus as recited in claim 34, wherein said binding reagents are patterned on said solid phase support into a plurality of distinct binding domains and at least one of said binding domains comprises binding reagents differing in specificity from at least one other binding domain.

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67. (Amended) An apparatus as recited in claim 34, wherein said solid phase is in contact with said diaphragm.

Please add the following new claims:

--69. (New) An apparatus for use in carrying out a binding assay comprising a cell, said cell comprising:

(a) one or more solid phase supports having one or more binding domains formed thereon; and

(b) means, structurally coupled to said one or more solid phase supports or to said cell, for sonicating contents of said cell.

70. (New) An apparatus for use in carrying out a binding assay, comprising:

(a) a cell,

(b) a sonication device, structurally coupled to said cell, for sonicating contents of said cell; and

(c) a light detector adapted for detecting or measuring luminescence emitted within said cell.

71. (New) An apparatus as recited in claim 69, wherein said means is capable of providing sonication energy at from 0.1 to 10,000 kHz.

sub D5 > 72. (New) An apparatus as recited in claim 69, wherein said one or more solid phase supports are working electrodes and said cell further comprises one or more counter electrodes, and said one or more working electrodes and said one or more counter electrodes are adapted for conducting an electrochemiluminescence assay.

73. (New) An apparatus as recited in claim 70, wherein said cell further comprises one or more solid phase supports having binding domains immobilized thereon.

sub D6 > 74. (New) An apparatus as recited in claim 69, wherein said one or more solid-phase supports comprise a carbon-containing polymer composite.

75. (New) An apparatus as recited in claim 69, wherein one or more solid-phase supports comprise fibril-polymer composites.

76. (New) An apparatus as recited in claim 5, wherein said cell includes thin capillaries and said sonication device is adapted to increase the rate of fluid flow through said thin capillaries.

77. (New) An apparatus as recited in claim 9, wherein said cell includes thin capillaries and said sonication device is adapted to increase the rate of fluid flow through said thin capillaries.

sub D7 > 78. (New) An apparatus as recited in claim 69, wherein said cell includes thin capillaries and said means is adapted to increase the rate of fluid flow through said thin capillaries.

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Cans 79. (New) An apparatus as recited in claim 70, wherein said cell includes thin capillaries and said means is adapted to increase the rate of fluid flow through said thin capillaries.

sub Dp > 80. (New) An apparatus as recited in claim 5, wherein said cell comprises a plurality of wells.

81. (New) An apparatus as recited in claim 5, wherein said cell comprises a well plate.

82. (New) An apparatus as recited in claim 5, wherein said cell comprises a 96 well plate or a 384 well plate.

83. (New) The apparatus according to claim 5, further comprising a light detector for detecting luminescence from said cell.

84. (New) The apparatus according to claim 9, further comprising a light detector for detecting luminescence from said cell.

sub D9 > 85. (New) An apparatus as recited in claim 5, wherein said one or more binding domains comprise binding reagents selected from the group consisting of antibodies, antibody fragments, enzymes, nucleic acids and receptors.

86. (New) An apparatus as recited in claim 9, wherein said binding reagents are selected from the group consisting of antibodies, antibody fragments, enzymes, nucleic acids and receptors.

87. (New) An apparatus as recited in claim 5, further comprising:

- (a) a cartridge comprising said cell;
- (b) a cartridge receptacle; and
- (c) a light detector for detecting or quantitating light from each of said

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binding domains.

88. (New) A method for conducting an electrochemiluminescence binding assay using the apparatus of claim 5, said method comprising:

- (a) introducing a composition containing an electrochemiluminescent moiety into said cell;
- (b) sonicating said composition in said cell with said sonication device;
- (c) applying electrical energy to said composition to cause said electrochemiluminescent moiety to luminesce; and
- (d) detecting or quantitating the electrochemiluminescence from said cell.

89. (New) A method for conducting an electrochemiluminescence binding assay using the apparatus of claim 9, said method comprising:

- (a) introducing a composition containing an electrochemiluminescent moiety into said cell;
- (b) sonicating said composition in said cell with said sonication device;
- (c) applying electrical energy to said composition to cause said electrochemiluminescent moiety to luminesce; and
- (d) detecting or quantitating the electrochemiluminescence from said cell.

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90. (New) A method for conducting an electrochemiluminescence binding assay using the apparatus of claim 70, said method comprising:

- (a) introducing a composition containing an electrochemiluminescent moiety into said cell;
- (b) sonicating said composition in said cell with said sonication device;
- (c) applying electrical energy to said composition to cause said electrochemiluminescent moiety to luminesce; and
- (d) detecting or quantitating the electrochemiluminescence from said cell.--

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91. (New) An apparatus as recited in claim 5, wherein said apparatus is adapted to detect specific binding reactions within said cell.